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Logistics Management for Import: A case to Kärkkäinen OY, Ylivieska-84100, Finland

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Abstract

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The cost reduction in logistics has become challenging in the present business world. At the same time the topic has become mandatory in business as well. The aim of this thesis is to present and analyze all the relevant topics in logistics and transportation in relation to import and export business in terms of retail market in Ylivieska region.

I have completed this thesis work as a case study to Kärkkäinen a retail market located in Ylivieska, Finland. The purpose of the thesis is to provide some best possible ways to import goods from abroad to Finland at a competitive cost. During the time of thesis writing I came up with broad spectrum of different issues associated with logistics and transportation. In fact my thesis is mainly based on basic theories needed for overall management of logistic and its cost reduction so that a firm can achieve higher customer satisfaction by reducing its operation cost and increasing efficiencies. Ultimately, it will help a significant increase in profit.

I believe this thesis will help everyone to some extent, whoever wants to get basic (in-depth) knowledge of logistics. This thesis is mainly theoretical followed by in-depth case studies related to Kärkkäinen. Some parts of the thesis are classified as it is directly related to Kärkkäinen but the theoretical part will give brief idea to the reader about the overall concept.
I hope that my efforts will make some difference in the logistics/supply chain management of Kärkkäinen concerning the overall efficiency and cost reduction in logistical activities.

Key words

Logistic, transportation, shipment, cargo, forecasting, containers, FCL, LCL, Import

Abbreviations

FCL = Full Container Load

LCL = Less Than a Container Load

BEP = Break Even Point

WMS = Warehouse Management System

ERP = Enterprise Recourse Planning

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1 INTRODUCTION

1.1 Background of the Study

Efficient management of logistics and supply chain is a crucial factor in the business world as it carries most of the cost for a service or products manufactured. The products or services can be generated with a low cost, but while it reaches to the final customer the prices goes beyond our expectation because of the cost of logistics and transportation.

Logistical activities are irrelevant to the size of the organization because it does not make much difference, but the real challenge is to reduce the final cost of the product and I believe the best possible way to tackle the situation is by proper management of logistics and supply chain. But the real question is how? It's not an easy task to get the direct answer to such a question. In this thesis I have tried my best to give some strategic solutions towards the logistics topic.

I have completed this thesis work as a case study to Kärkkäinen a retail market located in Ylivieska, Finland. The purpose of the thesis is to provide some best possible ways to import goods from abroad to Finland at a competitive cost, in order to maintain the cost as low as possible, so the company can generate maximum profit while meeting the customer's expectation. But at the same time, safe and cost-effective transportation is important otherwise the whole effort is meaningless.

The aim and objective of this thesis work are as listed

1. To present a cost-effective way to import goods to Finland from abroad.
2. Selection of suitable ports in Finland.
3. Comparison between FCL (Full Container Load) and LCL (Less than a Container Load).

4. Selection of a logistics company.

In order to achieve these objectives, I divided the entire thesis work in different successive topics, which are as Introduction (Background of the study); Logistics followed by Introduction to Kärkkäinen and Recommendations for future operations/management of logistics and supply chain by Kärkkäinen.

In the beginning of the work I have given the background of the study and methodology used to accomplish the task. In the same way the different activities of logistics from receiving of raw materials to arranging it to shelves (racks) of super market in order to sell it to final customer is covered under the topic Logistic. It also gives a brief knowledge/idea on different (cost effective) possible modes and ways of importing goods from foreign manufacturer. Under this topic I have also explained different possibilities in cost reduction in terms of FCL and LCL along with effective management of warehouse. The knowledge of Incoterms also plays an important role in "cost effective handling of supply chain" and supply chain. I have also given a brief introduction to Incoterms.

Under the topic Introduction to Kärkkäinen, I have evaluated the current running process of Kärkkäinen, how the things are running in the company, their import process and so on. At the end I have recommended the necessary changes and course of action needs to be followed in the future in order to minimize the cost of logistics and supply chain process of the company.

The complete thesis is based on the information provided by Kärkkäinen and different sources like books, internet and personal interviews.

I believe that my efforts will make some difference in the logistics/supply chain management of Kärkkäinen concerning the overall efficiency and cost-reduction. Even though this thesis is entirely done for a particular company, it provides a wide range of knowledge for every person who wants to get knowledge in "An effective way to import goods from abroad".

2 LOGISTICS

2.1 Introduction

It is a part of Supply Chain Management that plans, implements and controls the effective flow of goods throughout the supply chain. Logistics remains to be known as the transportation of goods by using different modes of transportation. In fact it serves a much bigger part in any organization. Logistics is the function that is responsible for the flow of materials from different suppliers into an organization, their movement within the organization through different kind of operations, and then finally delivery to the customers is one of the definitions of logistics (Waters, 2003). The flow of the materials can be categorized as inbound or inward logistics, outbound or outward logistics and finally materials management. The material which comes into an organization from different suppliers is known as inbound or inward logistics. The material movement within the organization is known as materials management and the material or the final products which move out from the organization to the customers is known as outbound or outward logistics.

Logistics is an important factor for any organization in today's economy. It can provide opportunities for the firms to increase the competitive advantage against its competitors, by designing such a system which will deliver to the customer better and faster services in comparison to its competitors. Another good feature of logistics is its complexity; a carefully designed logistics system cannot be duplicated easily and it can improve firm's competitiveness (Business, 2012). While dealing with the flow of material nowadays it is also important to share information among the clients and customers. Sharing of information will help to gain the trust of the customers because the step by step process will be visible to them and also it will help to minimize the errors in communication e.g. product quantity, dates of delivery, shipping address and so on. Logistics plays a significant role in profitability of a firm because of the integration between the logistics and marketing. For instance high customer services can be achieved if only the products and services are available. The availability of the products depends on the delivery strategy (from suppliers into an organization or from an

organization to customer). It also includes the investments that are made into the transportation e.g. Sea, truck, air etc… (Kaijomaa Saara, Lottanen Mia, 2006).

2.2 Key Logistical Activities

Logistics consist of multiple different activities such as customer service, demand/forecasting, transportation of goods, inventory, warehousing and so on. These activities can influence the price of the final product. These activities are important to facilitate the flow of the product from point of origin to point of consumption The main purpose of the logistics is to provide better customer services and satisfaction (Waters, 2003). Effective logistical actions will help to reduce the extra cost and the final product can be sold to the customer at an acceptable price while delivering high quality service. Some of the crucial logistical activities are listed below:

2.3 Material handling

It deals with almost every kind of material movement within the organization such as, movements of raw materials, work in progress, or finished products within a manufacturing area or a warehouse. An organization can save a significant amount of money with careful assessment of material movement i.e. reducing moving distance, minimizing waste, damage, mishandling etc…because whenever raw material or final product is moved within the organization or handled, it does not add any value to the final product it just increase the handling cost of the product.

2.4 Inventory Management

It deals with the inventory (final products or raw materials) to keep the product flow consistent. Keeping the inventory requires warehouse facility and handling of the material. While inventory does not add any value to the product but it helps to provide high customer services. Carefully designed inventory management system can help to understand what

materials or products should be stored i.e. keeping the inventory level as low as possible to achieve certain level of productivity while controlling the extra incurring expenses.

2.5 Customer Service

It is all about providing the right product to the right customer, at the right time and place in the right condition while keeping the cost as low as possible or providing the services at an acceptable price. Good customer service plays a crucial role in logistics, because it is the outcome of the logistics system and it improves customer satisfaction, creating new opportunities to gain more customers and provide the best possible solutions for the existing customers (Kee-hung Lai, T. C. Edwin Cheng, 2009).

2.6 Logistics Communication

Since the evolution of technology computerized communication is becoming popular, faster and easier. Logistics consist on multiple operations and it is important that all the operations should be integrated with each other to achieve high level of success, because if the operations have not enough communication the results can be fatal. The organization should have good communication with its suppliers, customers, marketing and manufacturing department as well as with its warehouse and some other major operations. It will minimize the wastage of time because all the information is closely monitored e.g. in warehouse level of inventory, raw materials and so on. Customer can provide their feedback and the firm can change its strategy about the product mix and suppliers can be informed about the type of raw materials. It is an important function and it is crucial because it will improve the efficiency of the organization.

2.7 Order Processing

It concerns with the information transfer between the customer and the organization. There are number of activities involved in this which are collection of data from the customer, checking and re-checking of the data, status of the customer, entering data into the organization's

information system so it can be seen by different departments and finally the transmitting of sales order information. The information can be used for further analysis about the market e.g. how much finance is required to fulfill the order, what kind of operations should be involved and how much products should be manufactured to make the product available for the customer. It also involves the checking of inventory status, invoicing, and account receivable from the customer. It helps to reduce the order cycle time which means that the time in between the order is placed and the product is received by the customer. It plays an important role in achieving customer's satisfaction (Kee-hung Lai, T. C. Edwin Cheng, 2009).

2.8 Demand Forecasting and Planning

The integration between different operations within the organization can be seen in this section. The marketing department provides the marketing forecasts based on the data provided by the customers on promotions, pricing, and product specifications. Than production department forecast its requirements on the basis of marketing departments forecast. Logistics involve in forecasting in terms of how much products should be ordered (raw material) from suppliers and how much products should stay in a particular market. In many organizations the production is made by logistical department (Organization, 2012).

2.9 Transportation

It deals with the movement of goods or products from an organization to its end customer. It concerns with the selection of most economical transportation mode e.g. road, sea, rail, air etc… and routes for the movement of the products. Every organization needs transportation whether for its raw material or the final products. Efficient transport management can lead a firm to attain high market share, satisfied customers and eventually high profit and growth (Ronald H. Ballou, 2004). Companies should introduce certain criteria while selecting the modes of transportation because it can result in profitability. Many companies also consider changing the dimensions of the products, so they can easily be transported to different locations (Cecil Bozarth, Robert B. Handfield, 2007). As it is mentioned earlier that there are

number of ways to transport goods, now I will discuss them in details because the selection of the transportation can be one of the most challenging activities in logistics.

2.9.1 Road Transport

It is one of the most commonly used transportation mode across the world mainly because of its flexibility. Roads are available almost in every part of the world either developed or in developing countries and easily accessible, so there is no need for the high initial investments (Waters, 2003). In Finland highways are preferred for transportation and distribution of products due to the low density population and the structure of the industry. The speed limits on roads are limited, but organizations can transfer large quantities of products and can perform multiple pick and drop services while using the single mode of transportation (Hakala, 2010).

In road transport transit times are comparatively shorter and it is fairly easy to find the fast roads i.e. motor ways, with the help of new technologies (GPS) and a little preparation is required, setbacks usually appear as a result of exceptional conditions. The selection of the roadways can be customized based on the requirements and it is fairly easy, door to door service can be provide with no intermediate handling and special deliveries can be made. Documentation procedure is not complex; the driver with a sufficient understanding can handle the paperwork but products needs to be specified beforehand i.e. from the warehouse. Packaging price for the product is comparatively low (Kaijomaa Saara, Lottanen Mia, 2006).

Based on the given circumstances and restrictions set by the different countries, highway transportation can transport loads up to 30 tonnes. The European Union has a gross limit of 42 tonnes (Waters, 2003). In certain countries vehicle mobility is restricted on weekends and public holidays on selected routes. It can cause the setbacks in transportation (Kaijomaa Saara, Lottanen Mia, 2006). There are number of vehicles which are being used today for road transportation but among them the most popular are Articulated Lorries and Lorry and Trailer. These vehicles are capable of moving large quantities of products across the roads. Road transport can become expensive if they are being used for large distances and due to

restrictions of weight and sizes the road transport is generally used for smaller loads. Even though it entails lower cost to transfer products by the roads inside the country there is however a slight possibility to see the road transport will be used for bulk or raw materials (Waters, 2003).

2.9.2 Air Transport

Air travel would be the fastest way to transport products globally comparing to the others, however it is comparatively expensive to any other available mode of transport. However the cost is high but the organization can use it as a tradeoff for inventory holding cost, with the fast transit and delivery timing the supplier can reduce the inventory holding cost. Aircraft are prepared for carrying large freight loads and it is recommended when the items are expensive and requires fast and safe transportation for longer journeys. Another benefit of air travel is its expanding network just as road transport. Air transport is less likely to be chosen due to its high price and if there is a necessity of transferring goods from one plane to another which will consume time and can reduce the main advantages of air travel (Waters, 2003).

2.9.3 Rail Transport

Rail transport is often used for the transportation of raw materials and containers for long journeys on land. Large volumes are often transferred by using the trains however there are certain limits e.g. the weight and sizes of the containers. Train transport is comparatively fast due to the use of the tracks (Waters, 2003). Tracks are only being used by trains and for that reason trains can maintain a specific speed through the entire trip and also it can provide links with other modes of transport e.g. trucks and trailers. The rail transport mode offers one great advantage which is low unit transportation charge, so that the large volumes can be transferred at an inexpensive price. Additionally there is a slight possibility of damaging goods which translates into low insurance cover cost (Kaijomaa Saara, Lottanen Mia, 2006).

The primary downside of the rail transport is its high initial investment and inflexibility. Another disadvantage is that the train travels between fixed terminals from point A to point B

and does not stop in between those points. In that case many customers need to transport their goods by the road at the both ends and the transfer will take time. It will translate the train transport as a slow alternative (Waters, 2003).

In Finland rail transport is mainly used for moving bulk materials. Due to its low unit transportation cost many Finnish companies have built there warehouses nearby the train terminals which helps them to move their materials rather fast and at lower costs. In Finland the train technology is pretty advance which provides better scheduling and less breakdowns. One benefit of rail transport in Finland is that the same rail track width with other European countries (Hakala, 2010). Rail transport can be used effectively if they have better connections with the harbors and with the airports because for now the common use of rail network is either passenger transport or bulk material transport but if the integration will improve between rail and harbors more companies will prefer to use rail transport than roads due to its fast scheduling, reliability and low unit cost.

2.9.4 Water Transport

Water transport is one of the oldest methods used in cargo transportation. Most of the trading today (approximately 90%) is done by water transport because there are almost no limitations on the sizes of the cargo. Ships are designed to carry almost any kind of cargo of any weight. The main advantage of using water transport is its lower price which is lower than any other mode of available transport. Although the price is low but there are some drawbacks as well for example inflexibility (not all ports handle multiple types of cargo), water transport consumes time, and change of transport mode is required from ports to deliver the product to its final destination (Waters, 2003).

In Finland the water transport mode is used for import and export purpose. The biggest harbor used for trading purpose is Kotka which is now merged with Hamina port. There are approximately 50 ports operating in Finland the ten largest of which deal with 75% of the total volume. Hamina-Kotka is the biggest port for both trading bulk cargo and for container

transport. Helsinki port plays an important role as well in trade because of its good connections with the other transport modes (trains and road).

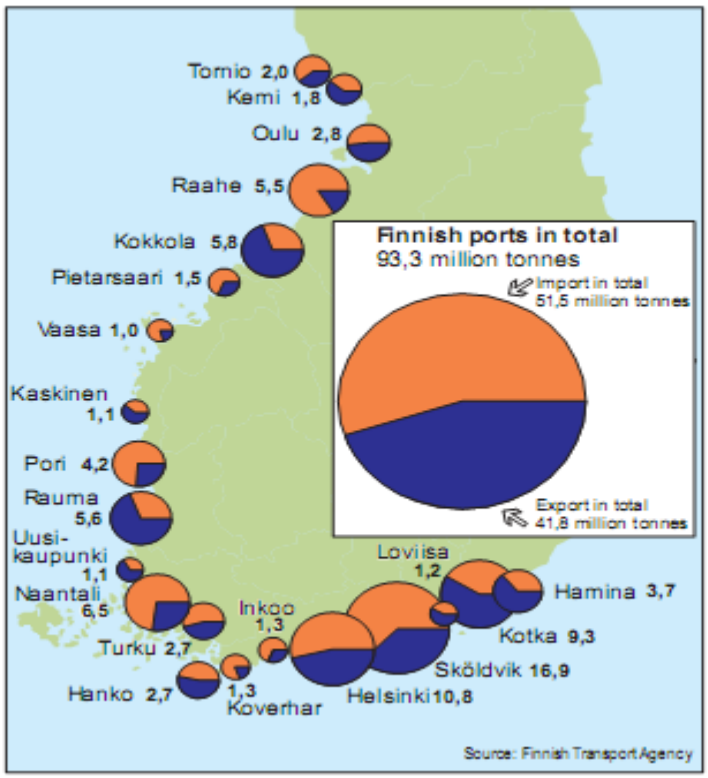


Figure 1.Goods traffic in Finnish ports in 2010

Kotka and Helsinki are the most important ports for containerized cargo. In the year 2007 the main ports used for international container traffic are Kotka (37%), Helsinki (29%), Hamina (11%), Hanko (10%), Rauma (4%) and others about 9% (Finland, 2007).

The European Union is focusing more on water transport because of the cost of transportation and environmental reasons. The introduction of sea highways will improve the water traffic between EU countries and hence will add value to the supply chain in general (Hakala, 2010).

a) Port of Kotka (Hamina-Kotka)

In May 2011 Port of Kotka and Port of Hamina merge together and made the highlights as the biggest port in Finland. The total area of the port is about 1090 hectares. The port is owned by

municipalities of Hamina (40%) and Kotka (60%). The Port of Hamina-Kotka is the house for over 100 logistic companies and provides multiple services such as, warehousing solutions, customs, and movement of goods or containers and so on. At the moment Hamina has the capacity of 500,000 and Kotka can handle about 1 million containers TEU yearly. Hamina-Kotka is the biggest container port in Finland. The port is equipped with new technology, movement of containers are carried out by cranes which reduces the time and provide safety to the goods (HaminaKotka, 2012). The combined storage area of the port is about 600,000 square meters, which includes services like, handling and intermediate storage of goods or containers and transit goods. Within those warehouses goods can be removed from containers and different actions can be performed such as labeling and packaging. As it is mentioned that more than 100 logistic companies are located in the port area, the main advantage for the customer in this case Kärkkäinen is cost competitiveness. Customers can take advantage of the high competition and it will be easier to find the best logistical solutions according to their needs at a reasonable price (HandBook, 2012) (See Chapter #3, Page 42).

Commodity group number of the Finnish Maritime Administration		
	All goods carried through the Port with no specifically mentioned unit price	**2.32 EUR/tonne**
26,27,33,34 35,38,39,40,41	Dry bulk (except scrap metal)	**1.08 EUR/tonne**
20,21	Wood	**0.50 EUR/m3**
22,24	Wood pulp and building boards	**1.30 EUR/tonne**
23	Paper, paper products, cardboard	**1.33 EUR/tonne**
36,37	Liquid bulk carried in tanker vessels, other products of the chemical industry	**1.83 EUR/tonne**
31,32,36.1	Oil products, methanol (CN 29.05.11.00)	**1.24 EUR/tonne**
32.1	Petroleum gases	**1.38 EUR/tonne**

Stuffed containers, trucks and trailers, irrespective of the weight of unit		**44.85 EUR/each**
Boats	0 - 5 000 kg	**71.75 EUR/each**
	5 000 - 20 000 kg	**143.50 EUR/each**
	over 20 000 kg	**215.25 EUR/each**

If a boat is stored within the Port area for more than 30 days the unit price is charged doubled after each interval of 30 days.

Cars (CN 87.03)	**5.40 EUR/each**
Other vehicles (not work machinery) 0 - 5000 kg	**10.80 EUR/each**
Other vehicles (not work machinery) over 5000 kg	**13.64 EUR/each**

The minimum charge is 12.00 EUR.

Figure 2.Hamina-Kotka Port Charges for import and Export 2012 (The given charges does not include Value added Tax.

Containers and flats EUR/TEU/day	
• 1 - 7 days	**5.00 EUR**
• 8 - 14 days	**10.00 EUR**
• more than 14 days	**15.00 EUR**

Figure 3.Dues for renting the warehouse at the port of Hamina-Kotka

The following charges are charged for the use of shore cranes:

1 CHARGE PER HOUR	**EUR/h**
• max. lift 0-20 tonnes	**164.65**
• max. lift 21-40 tonnes	**309.05**
• over 40 tonne lifts, joint lifts	**524.05**

• The charge per hour is determined on the basis of the heaviest lift made during each hour.

2 PIECEWORK	**EUR**
Bulk when the crane is equipped with a crab or loading box	**1.65 per tonne**
- except wood chips	**0.60 per m3**
Containers	**24.95 EUR each**

3 OTHER CHARGES

3.1 For work performed as overtime work, the following additional charges per hour are charged per each crane operator:

Weekdays	**54.00 EUR**
Sundays and public holidays	**108.00 EUR**

Sundays/public holidays are deemed to begin on a Saturday or other day preceding such day at 14.00 and finish on a Monday or other day following such day at 06.00.

3.2 For waiting time, the charge is half of the lowest hourly charge of each crane, and for waiting time on overtime there is also a charge in accordance with item 3.1.

Figure 4. (Charges for the Use of Port's Equipment)

To handle the cargo different types of equipment are available, total number of cranes available at Hamina-Kotka is 13, four multipurpose cranes for grab work. Seven container gantry cranes of 40-50 tonne capacity and two mobile cranes of 100-130 tonne capacity are available at the port (HandBook, 2012).

b) Port of Helsinki

The port of Helsinki is specialized in container traffic and handling. One of the main features of the Port of Helsinki is its location. It provides good connection to the main roads and train tracks for the further movement of the goods or containers within Finland. It holds the title for being the main port for international trading because of having good and streamline connections with the other European countries. At Vuosaari Harbor three container terminals are available for dealing with any sizes of containers. Vuosaari harbor provides multiple services to the customers such as, inspection of the containers, temporary storage, handling, loading, unloading of containers, documentation to the shipping companies, documentation for the Customs and transferring goods to the customers. The capacity of Vuosaari harbor is about 600,000 TEU annually.

Cargo charges	€	Code	€	Code
CHARGE TABLE FOR CARGO TRAFFIC				
The cargo charge is €/1,000 kg gross weight unless otherwise stated in the price list				
General cargo	IMPORT		EXPORT	
General charge				
• foreign traffic	3.08	15503	3.08	25502
• domestic traffic	3.08	35501	3.08	35501
Forest industry products and base metals [1)]				
• foreign traffic	1.81	15511	1.81	25510
• domestic traffic	1.81	35519	1.81	35519
New vessels (without manifest)				
% of the vessel's value				
• foreign traffic	0.10 %	15305	0.10 %	25304
• domestic traffic	0.10 %	35303	0.10 %	35303

Figure 5.General Cargo Charges of Port of Helsinki 2012

Unitized cargo traffic

			€	Code
VUOSAARI HARBOUR				
A	**Units stored in fields, €/TEU/day**			
	A1 Full containers and flats			
	Storage period	1 - 7 days	0.00	42416
		1 - 14 days	2.06	42432
		1 - 30 days	2.96	42457
		1 - 45 days	3.59	42473
		over 45 days (for each exceeding day)	4.44	42465
	The day of arrival to the port and the day of removal from the port are included in the storage period of the unit.			
	A2 Empty containers and flats			
	Storage period	1 - 4 days	0.00	44057
		1 - 14 days	3.09	44115
		1 - 30 days	4.44	44131
		1 - 45 days	5.39	44156
		over 45 days (for each exceeding day)	6.66	44172
	The day of arrival to the port and the day of removal from the port are included in the storage period of the unit.			
	A3 Semi trailers, lorries, interchangeable platforms etc. (for example cars, other vehicles, boats, machine and devices)			
	Storage period	1 - 3 days	0.00	42911
		1 - 4 days	2.96	42929
		1 - 6 days	3.80	42960
		1 - 8 days	4.44	42937
		1 - 12 days	5.70	42945
		over 12 days	6.97	42952
SOUTH HARBOUR AND KATAJANOKKA				
	Full and empty units stored in fields €/TEU/day			
	Storage period	1 day	0.00	44818
		1 - 3 days	4.22	44859
		1 - 6 days	6.17	44875
		1 - 8 and over 8 days	10.61	44883
	The day of arrival to the port and the day of removal from the port are included in the storage period of the unit.			

Figure 6.Charges for storing goods at Port of Helsinki 2012

The Port of Helsinki is equipped with new advance technology for moving the containers from ships to the other transport modes. It helps to save time and reduce the possibilities of damaging goods. Having good connections with the roads and train tracks movement of goods doesn't take much time while using the cranes. There are number of cranes are available to

handle almost every kind of cargo such as "E-Quay (4 – Container Cranes), F-Quay (1 Container Crane), D-Quay (Multi-link terminals 2 Container Cranes) and D-Quay (2 Container Cranes)", the cranes are owned by different companies providing their services at the port and those cranes can be rented or the contract can be given to the owner companies to perform the required operations. The port of Helsinki provide shelter to more than 100 logistic companies which can provide multiple solutions for the customers such as, custom clearance, movement of goods, loading and unloading and so on. Due to high competition the prices for the services are very competitive and customers can take good advantage of that (Helsinki, 2012).

A brief demonstration of transportation modes in terms of their advantages and disadvantages are as follows:

Table 1. Road transport

Advantages	Disadvantages
Flexibility	Capable of carrying less load
Extensive road networks (All around world)	Traffic delays
Huge variety of Vehicles	Useful for finished goods only (Mainly)

Table 2. Air Transport

Advantages	Disadvantages
Faster than any other mode	Fairly expensive
Reliable for high value products	Change of mode is required
Extensive network	Little control over price (fixed)

Table 3. Rail Transport

Advantages	Disadvantages
Relatively Low Cost of Transportation	In-flexibility
Relatively less competition	Specified or Fixed routes
Delivery on time	High initial investment
Large volumes can be moved at low cost	Limited access (Move goods by some other mode, due to specific or fixed routes)

Table 4. Water Transport

Advantages	Disadvantages
Carrying huge loads (5000-10000) Tons	Relatively slower
Good for short and long distances	Have to change the mode of transport
Fixed price for all the products	Change in Climate can cause delays

2.10 Containerized Cargo Shipments

The use of containers for export or import helps to make the transportation easier, more secure and faster. Containers can be transferred from one transportation mode to a different one (e.g. Ships to train or truck & vice versa) quickly by using latest equipment.

Cranes and forklifts are generally used in dealing with containers. Forklifts are used at the dock or shipping terminals to move containers at short distances. Containers have container pockets where forklifts can easily be used.

Today the ports around the world handle approximately 100 million TEUs yearly. The unit **TEU (twenty-foot equivalent unit)** is used to express the relative amount of containers based on the comparable length of a 20' container. For instance, 100 containers of 20' are 100 TEUs, while 100 containers of 40' are 200 TEUs (Export911, 2012).

The ships that are being used for overseas traffic are designed based on the container dimensions. The containers can easily accommodate inside the ship alongside without losing any extra room in the ship. The ships that have ready compartments for the containers are

classified as **Cellular Container Ships**. These days ships are much larger and quicker, particularly the one which is being used in extended journeys. The ships which usually travels at 20 knots or below are commonly being used in short sea journeys.

The knot is a unit of ship's velocity, being one nautical mile per hour. One nautical mile is 1.852 km. A ship that travels at 20 knots is moving at a speed of approximately 37 km per hour (Export911, 2012).

2.10.1 Benefits of Containers

The use of containers in the shipping sector offers a number of valuable features. There are number of advantages including durable design of the containers, easy transportation, safe environment for the products and availability in different kinds and sizes. The containers can be modified easily according to the requirements. Containers can be stacked on each other easily without damaging the goods and they also provide theft security (Solutions, 2012). Containers are designed in such a way that they can be moved without having any intermediate reloading. Containers are equipped with the gadgets enabling there ready handling especially in the multimodal or intermodal transportation and transshipment .The freight protection of container shipments against theft, pilferage and damage is improved. Therefore, the freight insurance in a container shipment is typically lower compared to the break-bulk shipment (Export911, 2012).

2.10.2 Container Types and Sizes

There are many kinds of containers available in the market for shipping purposes, but the most common types of containers which are being used in shipping industry are 20', 40' and 40' hc (High-Cube Container). Brief descriptions about containers are as follows:

a) Standard Containers

Standard containers are also called General Purpose Containers. Standard containers are generally used as 20' and 40' containers. Containers with smaller dimensions are very rarely used. In fact, the trend is moving towards even longer dimensions, e.g. 45'. Standard containers are often designed with certain optional accessories e.g. Forklift Pockets, Gooseneck tunnel, Grappler pockets, Clothes rails for hanging garments etc… (Service, 2012)

Measurements/Dimensions

The following data is taken from Griffin & Company Logistics (Logistics, 2012):

Table 5. 20' Standard Container

Dimensions	**Length**	**Width**	**Height**
Overall	20'=6096 mm	7' 9.25'' =2370 mm	8'6'' = 2591 mm
Internal	19' 5.75" = 5935 mm	7' 8" = 2335 mm	7' 9.75" = 2383 mm
Door Opening		7' 8" = 2335 mm	7' 6.25" = 2292 mm

Max. Gross: **52910 lbs. = 24000 kg**

Tare: **4585 lbs. = 8080 kg**

Max. Payload: **48325 lbs. = 21920 kg**

Cube: **1197.25 cu. ft. = 33.9 m3**

Table 6. 40' Standard Container

Dimensions	**Length**	**Width**	**Height**
Overall	40' = 12192 mm	8' = 2438 mm	8' 6" = 2591 mm
Internal	39' 5.25"= 12022mm	7' 5.625" = 2352 mm	7' 10.25" = 2395 mm
Door Opening		7' 8.25" = 2343 mm	7' 5.75" = 2280 mm

Max. Gross: **67200 lbs. = 30480 kg**

Tare: **8600 lbs. = 3900 kg**

Max. Payload: **58600 lbs. = 26580 kg**

Cube: **2392 cu. ft. = 67.7 m3**

b) High Cube Containers

High Cube Containers are similar to standard containers but they are a bit taller and offer more space for the packing goods. The length of the container is similar as 40' container but the height is **2895mm** where standard 40' container offers **2591mm** of height. Although high-cube containers offer more space, they also cost a bit more than the standard containers.

Measurements/Dimensions

The following data is taken from Griffin & Company Logistics (Logistics, 2012).

Table 7. 40' High-Cube Container

Dimensions	Length	Width	Height
Overall	40' = 12192 mm	8' = 2438 mm	9' 6" = 2895 mm
Internal	39' 3.25"=12022 mm	7' 8.5" = 2352 mm	8' 10.25" = 2700 mm
Door Opening		7' 5.75" = 2340 mm	8' 5.75" = 2585 mm

Max. Gross: **67200 lbs. = 30480 kg**

Tare: **9150 lbs. = 4150 kg**

Max. Payload: **58050 lbs. = 26330 kg**

Cube: **2697 cu. ft. = 76.4 m3**

"The 40' High Cube has identical length as the standard 40' container but it is taller and fits up to 72 cubic meters of product. Large-scale importers frequently consider the 40' High Cube since the shipment cost and local freight-related expenses are only a little higher compared to a standard 40' container but 20% more loading capacity (Indonesia Export, 2012).

The container capacity is the total cube a container can accommodate. The term cube often refers to the cubic measurement of cargo. The capacity (i.e., the internal volume) is determined by multiplying the internal dimensions, that is, the product of internal length,

width and height. The capacity may vary among containers of the same length and height" (Department, 2012).

2.10.3 Number of Options in Transporting Goods via Containers

There are number of ways to import or export goods while using containers. Most commonly used methods are as follows:

a) Full Container Load (FCL)

It is an ordinary (twenty or forty-foot) container, which is loaded and unloaded under the risks and consideration of the shipper or consignee. It is also known as full trailer load (FTL) (Dictionary, 2012).

In practice it means that the whole container is intended for one consignee. FCL usually turns out to be the best choice to optimize import or export operations by ocean, making it more effective. FCL container shipment attracts lower shipment rates than an equivalent weight of cargo in bulk. Ideally FCL means that the container is loaded to its allowable maximum weight or volume. In practice, the FCL in the ocean freight does not always mean packing a container to its full payload or full capacity (Group, 2012).

It is a most economically feasible shipping substitute since the charges are based on a contract or fixed rate to get a full container. Another advantage of FCL shipping is that the departure date of the merchandise is much more flexible and can be more carefully synchronized with the production timetable since the shipper is not obligated to hold back for consolidation (Indo, 2012).

b) Less Than a Container Load (LCL)

Shipping term for cargo that is insufficient either in quantity or in weight to qualify for the freight rates applied to a standard shipping container (Business Dictionary, 2012).
Less than a container load is usually a shipment which is not sufficient enough to fill up a standard cargo container. The abbreviation LCL formerly applied to "Less than (railway) Car Load" for the volumes of material from multiple shippers or for shipping and delivery to several locations which can be transported in one railway car for cost efficiency. LCL freight is often categorized and redistributed into different railway cars at intermediate railway terminals en-route towards the final location. It can also be defined as "a consignment of freight that is ineffective to fill a shipping container. Products or freight can be gathered with other consignments for the same destination in a container at a container freight station (Containerization, 2012).

LCL solutions are ideal for small loads, generally up to 10 pallets where using an entire container will not be economical. Shipments are transported to an authorized receiver who then forwards the load to a consolidator at the port who loads a container (Giant Logistics, 2012).

2.10.4 Full Container Load (FCL) vs. Less Than a Container Load (LCL)

Each method has its advantages and disadvantages. I tried to make a small comparison in the table below:

Table 8. Full Container Load (FCL)

Advantages	Disadvantages
Products are Safe (Loading from Supplier – Unloading at the Destination)	Container should be completely filled (Waste of money if Container is half filled)
Flat Rate for the shipping (No regards of the value of the items involved)	Lengthy transit times
Utilization of the whole Container	Payment for the whole container
Charges are per cubic meter.	
Freedom of shipping (Shipments can be made at any time).	

Table 9. Less than a Container Load (LCL)

Advantages	Disadvantages
Only pay for the space which is utilized by the product	Longer transit times (Due to additional transit points because of consolidation)
Suitable for small orders	Packaging charges (Products need to be packed before loading into container)
Relatively cheaper than Air Cargo	Product Limitations (fragile products e.g. Glass, Mirrors etc…)
	Extra payments for less space (Depending on Packaging Material)

2.11 Break Even Point

A point where the revenue in any business becomes equals to the total expenses. This term is widely used in economics and accountings, a small yet powerful tool to calculate in terms of

gain and losses. It determines how much a company is required to sell their products in order to generate profit; it will give a certain limit after which the business will start to generate revenue (eNotes, 2012).

In linear Cost-Volume-Profit model, Break Even Point (BEP) can be written as follows:

$$TR=TC$$

$$P*X=TFC+V*X$$

$$P*X - V*X=TFC$$

$$(P - V)*X=TFC$$

$$X = TFC \div (P - V)$$

P = Selling Price per Unit

X = Number of Units

V = Variable Cost per Unit

The formula suggests that, in order to generate profit "X" number of units should be sold.

BEP can also be used in terms of making decisions for transportation services. The goods are mainly transported via either LCL or FCL. To calculate which form is most suitable for the company, it is required to know the prices for both FCL (Full Container Load) and LCL (Less than a Container Load). As the prices would be given by the freight forwarders it is very easy to calculate the most suitable solution with the help of this formula:

X = FCL (Full Container Load) ÷ LCL (Less than a Container Load)

"X" is the number of units which should fit inside the container. The formula would work in this way (Wang, 2012):

BEP 20' = and/or BEP = 40'

With the help of this formula, decisions can be made about either LCL is suitable for the products or FCL. It will give the idea after how many units it is sensible to change the service.

(Note: The formula should be tested before applying it into the real life situations)

2.12 Procurement/Purchasing

This section makes sure that the products or raw material flow will be constant from supplier(s) by sending purchase order to the suppliers. It also deals with all the paper work involved in obtaining raw materials such as terms and conditions, quantity, arrival dates, payments and insurance claims.

2.13 Inward Transportation and Receiving

Selection of the transportation mode and routes (most economical), which will bring the raw material from suppliers into the organization. All the requirements have been taken into the account e.g. legal issues, payment methods, delivery timings, and reliability of the transport operator (cost, efficiency). Receiving section makes sure that the products are in good condition, all the necessary paper work has been done, loading and unloading of the products and sorting of the products according to their specific places in the organization (Hakala, 2010).

2.14 Warehousing

Over the year's warehouse have been used for storing goods and materials so that they can be used when the demand is changing. Warehouses can be used for storing both raw materials and the final products. They do not add any value to the products, but it is one of the most important factors of today's supply chain, because they provide consistency either in production or in customer's satisfaction. The idea of the warehouse is to increase productivity, reduction in costs and inventory while providing the high customer's satisfaction. The role of the warehouse in the supply chain can be explained by explaining the role of the supply chain itself, which is, to deliver the right product to the right customer in the right quantity at the right time, while the condition of the products should be perfect (Richards, 2011). If the organization wants to deliver the right product in the right quantity to its customers, it is important that the warehouse staff has picked the right product and dispatched it in its right quantity. Delivery of the product to the right customer at the right place requires that the products should be labeled according to the customer's given address and should be loaded to

the right vehicle, so the products can reach its destination on time. Before the products will leave the warehouse area, it should be checked and confirmed that the products are in its right condition. It will ensure that the customer will receive their products undamaged. Carefully monitored warehousing operations can help to reduce the cost and therefore the products can be sold to the customer at an acceptable price (Richards, 2011). Holding excessive amount of inventory or raw material is out of question in today's economy because they are not adding any value for the company and the price of the land and energy is rising constantly and to take care of the inventory extra labor work is required. Number of actions can be taken to reduce that extra cost and inventory which will translate into profitability of the organization.

2.14.1 Activities of the Warehouse

Warehouses today are being used for number of different activities rather than just storing goods and raw materials. Some of the main activities include receiving products from multiple suppliers, examining the products to make sure that they are in their right condition, sortation of the products according to their dimensions and keep the products until they are needed either in production or for direct sales that is the receiving end of the warehouse. At the other end the products are being prepared for packaging, labeling, dispatching, loading to the vehicles and then deliveries are arranged to send the products to the customers. It is important to keep the documentation of all the activities because the information can be used to know inventory levels, number of operations performed on a certain products, which operations can be neglected or improved and so on (Waters, 2003). Some of the warehouse activities are discussed in details down below:

a) Raw material Storage

Purchasing goods in large volumes attracts lower cost of transport per unit. In this section of the warehouse raw material is delivered by the supplier(s) in the large quantities. The role of the warehouse is to break the raw material into manageable quantities and sort them according to their specifications. Later on that material can be transferred to the manufacturing plant for

further processing or can be transferred for labeling and packaging, so that the products can be delivered to the end customer (Richards, 2011).

b) Intermediate Facilities

These kinds of warehouse operations are popular among the electronics and automotive industry. Different kinds of materials are stored at the warehouse delivered by different suppliers for further processing or customization. The products are then transferred to either the assembling department or on to the production line, where various products are assembled together and then delivered to the final customer. In this part of the warehouse products can stay for a certain period of time (Richards, 2011).

c) Ready Products

In this section the finished goods are stored for the delivery purpose to the customer. It acts as a buffer facility for the companies; these products can be delivered to the customer at any given time if the demand is increasing. Another benefit is that the production line is free and can be used in manufacturing for other products (Richards, 2011).

d) Cross Dock

Cross docking is becoming popular these days because it helps to minimize the transit times. In this section products (finished or unfinished) come from different destinations, items are than identified (labeled etc…) and combined with the other products who share the same destination. This is in practice reduce handling cost (no loading or unloading is required) and minimize the need to store the products at the warehouse (Chain, 2012).

e) Packaging

It is very import process because almost every product requires packaging because it can protect the item and will enable the product to identify easily. Products can be handled easily if they are packed and will prevent damaging of the products. Packaging also serves as a marketing tool, because companies can label the products and can also promote other products on the same package (Waters, 2003).

2.14.2 The Layout of a Warehouse

It is import to pay good attention while designing a warehouse because it will help to reduce cost and will reduce time during different operations. The questions which should be asked during the warehouse design are (James A. Tompkins, Jerry D. Smith, 1998):

- How to utilize the space effectively?
- What kind of design will reduce the material handling operations?
- Loading and unloading areas where the suppliers can deliver their goods and the ready products can be delivered easily.
- Arrangement of the items
- What kind of equipment is required to perform certain processes?
- How to reduce picking and packaging time?
- Flexibility of moving products within the warehouse facility
- Protection of the items from damaging

The second part of warehouse designing requires extensive data gathering. The data should include information about the products (sizes, weights, dimensions etc…), inventory levels, the time required to fill the order information, estimate demand, racking area for the products, packaging of a product, dispatching, labeling, the time is required for loading and unloading the material, types of the equipment are in use, sizes of vehicles, location of the warehouse, battery charging areas for the equipment used within the warehouse, dimensions of the warehouse, what kind of services can be provided by the warehouse, parking areas for the vehicles, storage area for pallets etc... The collection of data consumes time (it is important

and effective to document all the information) but eventually it will help to increase the efficiency of the warehouse (Alan Rushton, Phil Croucher, Peter Baker, 2006).

2.14.3 Warehouse Management System

These are software applications which can be integrated in warehouse to improve its efficiency. A warehouse management system (WMS) should be selected according the specifications of a company. WMS can help to reduce time during the documentation of the operations which are taking place in a warehouse e.g. order receiving, transfer goods from one department to another, inventory levels, movement of the goods and so on. It can show all the process in real time from receiving to shipping. A carefully selected WMS will reduce the order cycle time, will provide accuracy in inventory levels and will help to manage the warehouse space effectively. The use of the good WMS will improve efficiency and eventually a better customer satisfaction can be achieved (Tompkins, 2003).
Warehouse Management Systems possess multiple features some of them are as follows: (AiSoft, 2012).

a) Receiving

When products arrive at the warehouse they are marked as received in the system so that the products can be moved from the receiving section to the sortation area. The details of the process are than stored in the system to keep the data up-to-date.

b) Inventory Management

The system can provide up-to-date inventory level information at any given time. With the help of such data the inventory accuracy can be monitored easily and the space in the warehouse can be utilized effectively.

c) Stock Allocation, Picking & Packing

This part of software provides the real-time details about the products which should be delivered in the near future. When the software notify about the products, staff can pick up the products and prepare them for packaging and finally for the delivery. All the important information is than documented into the system.

d) Shipment and Reporting

The software will notify the confirmation of shipment according to the documented date. Afterward the inventory level will decrease automatically in the system. As the software stores almost every kind of related information, it can be accessed later on for the further assessment which can be utilized to understand which areas of the warehouse needs improvements.

Unfortunately WMS is an expensive product to buy and requires special knowledge to operate the system. Therefore companies can either design their own WMS according to their needs or they can rent a WMS. For a number of years SAP was the market leader for WMS and the initial investments in such system was really high, but at the moment there are number of solutions available in the market at reasonable price.

2.15 Incoterms

Incoterms help to understand the risks involved in transportation of goods, costs and tasks involved in transfer of goods between buyers and sellers. Incoterms or International Commercial Terms have been around from few decades. Incoterms were introduced by ICC (International Chamber of Commerce) on 1936 to promote international trade among the countries. Incoterms mainly deals with the transportation of the goods. Incoterms rules are available to define the responsibilities of buyers and sellers concerning the goods delivery under a sales contract for both international and domestic trade (Incoterms 2010, 2012). Incoterms are internationally recognized rules and accepted by almost every country. The latest version is Incoterms 2010 which was redefined by ICC and implemented in January 2011. Today most of the trading happens under those predefined rules.

The latest Incoterms 2010 consist of 11 incoterms which are as follows (Incoterms 2010, 2012);

Table 10. Incoterms

Rules for any mode of transportation	**Rules for Sea and inland waterway only**
• **EXW** (Ex Works) • **FCA** (Free Carrier) • **CIP** (Carriage and Insurance Paid) • **CPT** (Carriage Paid To) • **DAT** (Delivered at Terminal) • **DAP** (Delivered at Place) • **DDP** (Delivered Duty Paid)	• **FOB** (Free on Board) • **FAS** (Free Alongside Ship) • **CFR** (Cost and Freight) • **CIF** (Cost, Insurance and Freight)

2.15.1 Incoterms for any mode of transportation

EXW (Ex Works)

In this incoterm all the responsibility moves to the buyer. Seller is responsible for only delivering the goods at a certain place from where the buyer will collect the goods on its own risk. For export duties, insurance, transportation of the goods, loading and unloading the responsibility goes in buyer's hand. In this term seller bears the minimum risk. Seller's responsibility is over after the delivery of the goods is made at the disposal of the buyer. An exception can be made if both parties agreed in the contract that loading and unloading of the goods would be seller's responsibility. This term can be used for any mode of transportation (UNDP, 2012).

FCA (Free Carrier)

In this term the seller is responsible to deliver the goods either to a specified person or a carrier selected by the buyer. The seller should bear all the risks such as delivery costs, loading, unloading and clearing the goods for export. Seller's duty is over after the goods are handed over to the buyer's appointed carrier at a specified place. While using FCA it is important to note that loading and unloading depends on the place of delivery, for instance seller is responsible for loading if the delivery is made at the seller's location, but seller is not responsible for unloading the goods if the delivery is made somewhere else. This term is common in intermodal transportation but can be used in any mode of transportation (UNDP, 2012).

CIP (Carriage and Insurance Paid)

In this term seller is responsible to bear all the cost and risks during the transportation. It is seller's responsibility to clear the export procedure and also acquire insurance on the behalf of buyer's risk of loss or damage to the goods. The insurance costs are paid by the seller. Once

the destination (selected by the buyer) is reached, the buyer would take all the responsibilities for the goods. The term can be used for all the mode of transportation (Kalgin, 2012).

CPT (Carriage Paid To)

Seller is responsible to transport the goods to a specified place. Seller should bear all the cost during transportation until the specified destination is reached. After the destination is reached, the duties will transfer to buyer from seller. Seller is obligated to clear the goods for export. This term can be used in any kind of transportation mode (Water, Container, Bulk and so on).

DAT (Delivered at Terminal)

Seller delivers the goods to a specified port or terminal either selected by the buyer or mutually agreed by both parties. Seller would bear all the risks and cost of transportation of goods to the specified place. Seller is obligated to clear the goods for export procedures. Afterwards the buyer is responsible to make sure that the custom duties are paid and the goods are clear from customs. An exception can be made, if the seller agrees to bear all the charges and risks of transferring goods from the point of origin to the final destination (Kalgin, 2012).

DAP (Delivered at Place)

Seller is responsible for the delivery of the goods (destination specified in the contract) and all the risks involved in the transportation. Seller is obligated to arrange the freight forwarder for the movement of goods and should clear the goods for export. Loading and unloading costs will be paid by the seller from point of origin to the final destination. Buyer's responsibility is to make sure that the custom duties are paid and goods are clear from the customs (Kalgin, 2012).

DDP (Delivered Duty Paid)

While using this term maximum responsibility goes to the seller. The seller is responsible to bear all the costs and risks involve during the transportation of goods from the point of origin to the final destination. The seller should arrange the carrier, loading and unloading, clearance from export, custom clearance, custom duty payment, value added tax payment and finally delivering goods to the final customer. This incoterm can be used for any mode of transportation.

2.15.2 Incoterms for Sea and Inland Waterway

FOB (Free On Board)

The seller's responsibility is to load the goods on the vessel or ship specified or selected by the buyer. The responsibility moves from seller to buyer when the goods pass the ship's rail. Seller is responsible for clearing the goods for export procedures. Afterwards, buyer should take care of the goods and bear all the costs, loss or damage, insurance, custom duty, custom clearance and movement of the goods till the final destination. This term should be used only for sea or inland waterway transport (UNDP, 2012).

FAS (Free Alongside Ship)

The seller is obligated to deliver the goods to the port (specified in the contract). Seller should clear the goods from export procedures. Seller's duties are done when the goods are placed at the specified destination (any damage to the goods or loss will be responsibility of the buyer). Afterwards all the responsibilities move to the buyer. Buyer should take care or all the risks and costs during the movement of the goods. This incoterm can only be used in sea or inland waterway transport (Kalgin, 2012).

CFR (Cost and Freight)

The seller is responsible for bringing the goods to the port of destination (specified in the contract). Goods are considered as delivered when they pass the ship's rail. Seller is obligated to bear all the costs and freight which occur during the movement of the goods to a specified port of destination. Seller should take responsibility for clearing the goods for export procedures. Afterwards all the occurring costs and risks would be transferred to the buyer. This incoterm should only be used for sea and inland waterway transport (Kalgin, 2012).

CIF (Cost, Insurance and Freight)

The seller is obligated to deliver the goods to a specified port of destination. Same as CFR the seller should bear the costs and freight which occur during the movement of the goods. Additionally seller must buy insurance on the behalf of buyer's loss or damage to the goods during the shipment. Goods are considered as delivered after they pass ship's rail. Seller is obligated to clear the export procedures. Afterwards the responsibility moves to the buyer and buyer should bear all the occurring cost during the voyage. This term should only be used for sea or inland waterway transport (Kalgin, 2012).

3 INTRODUCTION OF KÄRKKÄINEN

J. Kärkkäinen OY is one of the largest privately owned companies in Finland. The company was established in 1988 by Juha Kärkkäinen. In 1991 the company was registered and received its first permanent office space of 50m². Kärkkäinen has been expanding its business since then. Now the company owns four shopping centers in Ylivieska (30,000m²), Lahti (32,000m²), Oulu (5000m²) and Ii (10,000m²). Kärkkäinen's headquarter is located in Ylivieska. Kärkkäinen's core business is in retail market. The company offers almost 150,000 different kinds of products from paper to car parts, to its customers. Kärkkäinen does not sell any food products except snacks and chocolate. Customers are mainly from Finland but in holiday seasons tourists as well enjoy the wide variety of products.

Kärkkäinen has its competitive advantage among its rivals because of high quality products and affordable prices. More than 400 people are working at Kärkkäinen on different locations. Approximately 1.2 million people visit Kärkkäinen yearly. Kärkkäinen attracts more and more customer every day because of its reputation and wide range of products.

3.1 Financial Information

Table 11. Financial Information of Kärkkäinen (Sanomat, 2012)

	2006/01	2007/01	2008/07	2010/01	2011/01
Turnover in 1000 EUR	71 190	68 684	114 347	158 543	121 569
Other Revenue. %	2,00	-3,50	11,00	38,70	15,00
Net income for 1000 EUR	1 992	49	-	-4 311	5 680
Operating profit,%	4,40	0,70	0,60	-1,80	1,00
Number of employees	270	305	305	426	411

Table 12. Net Sales of Kärkkäinen (Sanomat, 2012)

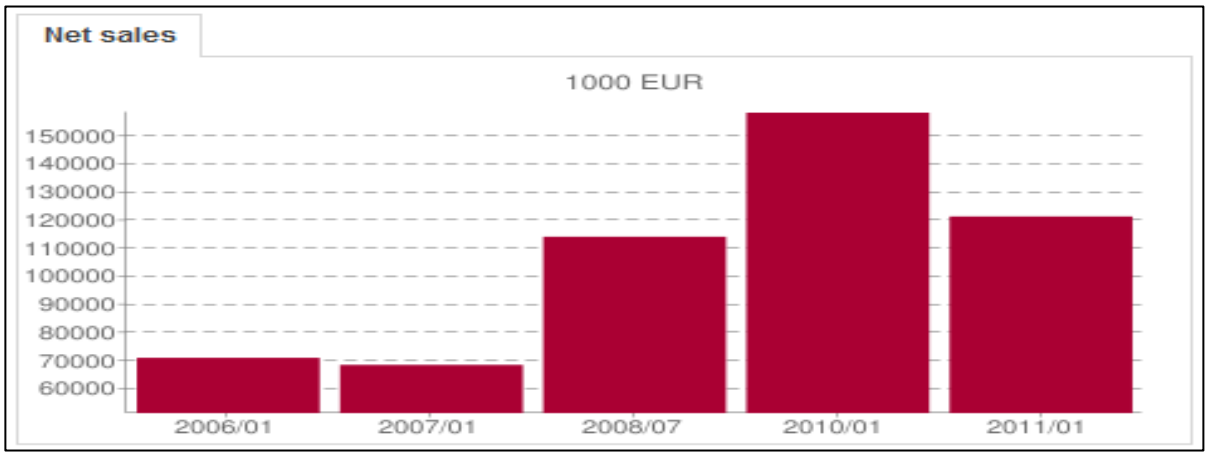


Table 13. Net Income (Sanomat, 2012)

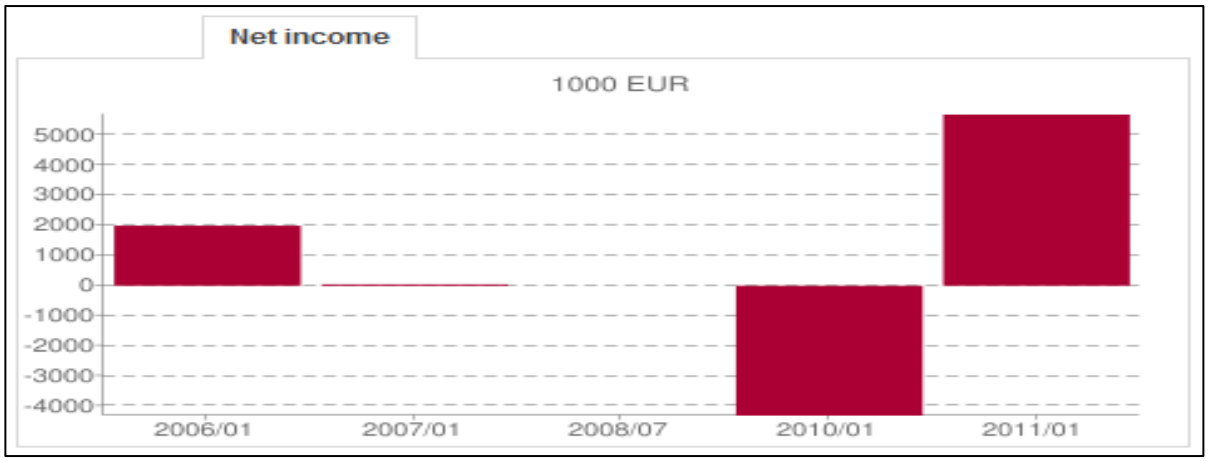
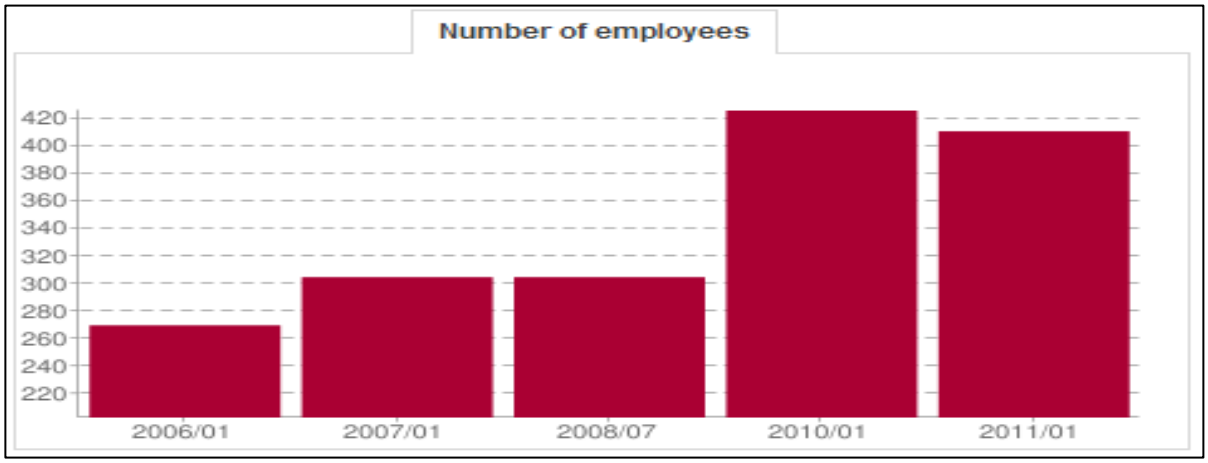


Table 14. Number of Employees (Sanomat, 2012)



3.2 Import process in Kärkkäinen

A short description on how the import takes place at Kärkkäinen (based on the personal interviews and information provided by the company's employees). There are number of steps involved in the import process which can be seen in the process flow chart on page 40. It requires a lot planning before importing because it is very important that the products are in correct form and quantity. As being in retail business time is an important factor. Customers will lose interest if the products are either faulty or not on time. The steps involved in import are down below.

A request for tender is sent to the suppliers about the products, quantity, timings, and terms of delivery, delivery conditions (full container load or partial load) and so on according to European standard models. After receiving the quotations from different suppliers, the selection is made according to the standards set by Kärkkäinen.

After selection of the supplier a new order is made and reviewed (Price, amount of products, amount of containers, weight of the products, types of products). After re-checking the order it is signed and stamped by the authorities and then sent to the suppliers. The supplier will receive the order confirmation and as well signed the order document and then send back to Kärkkäinen. Supplier will not start the production until they received the advance payment (agreed on the contract normally 30%), so the account office sends a receipt of payment (according to the contract) to the seller so they can start the production. In some cases the supplier requires a letter of credit which is sent to the supplier against the shipping documents. Normally the letter of credit is valid for 21 days after which it will expire.

The selection of freight forwarder is been made after clearing the documentation with the suppliers. The selection of the shipping company is based on previously used companies and the comparison of different services provided by them. Of course the price and reliability are one of the most important factors. After the selection of shipping company is made the notification is sent to the shipping company about the products and the destination port.

When the products are ready the supplier(s) arrange the shipment of the products and all the necessary documents are sent to Kärkkäinen via email, than the rest of the payments are made and during that time products are already on their way to Finland. After paying the whole amount the supplier(s) send the original shipping documents to Kärkkäinen because without those documents the products cannot be cleared from the ports. The documents are than sent to the freight forwarder(s). It is freight forwarder's responsibility to clear the customs and inform to Kärkkäinen's staff so they can provide more information on moving goods to specific destination. After the custom clearance the warehouse staff is informed by the import staff, so they can arrange the place for the coming products and containers. When the products are delivered to the warehouse and all the necessary tasks are performed, the account office review the freight forwarder's invoice and clears the payments. In case the products are damaged or not in the right condition, the warehouse staff should inform the insurance company right away for the sake of saving time and money.

The data in ERP system is updated after reviewing all the documents and invoices. In Kärkkäinen's case the system they are using is SAP.

Import Process Flow

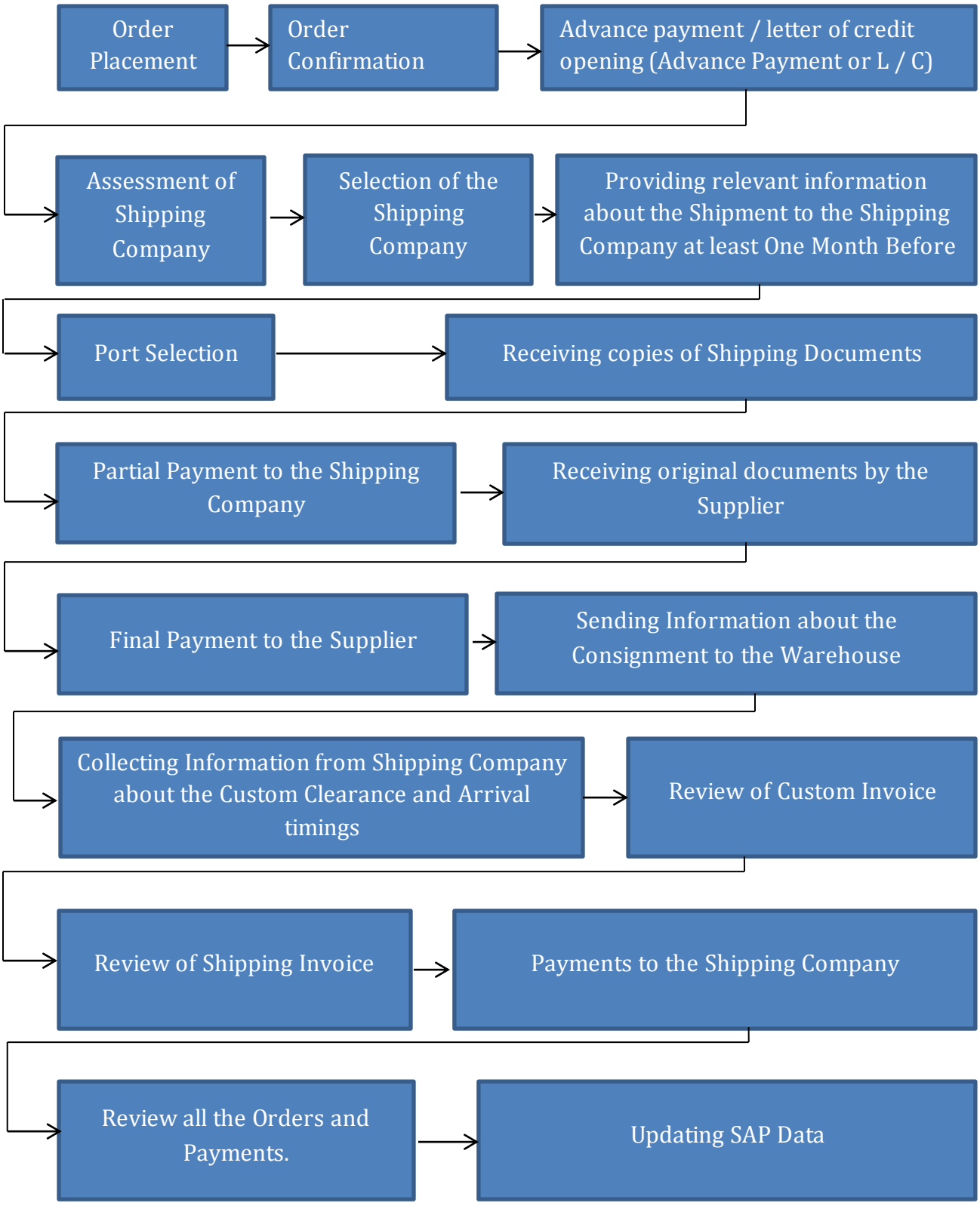


Chart 1. Source: Modified version from Kärkkäinen's Information

3.3 Warehouse

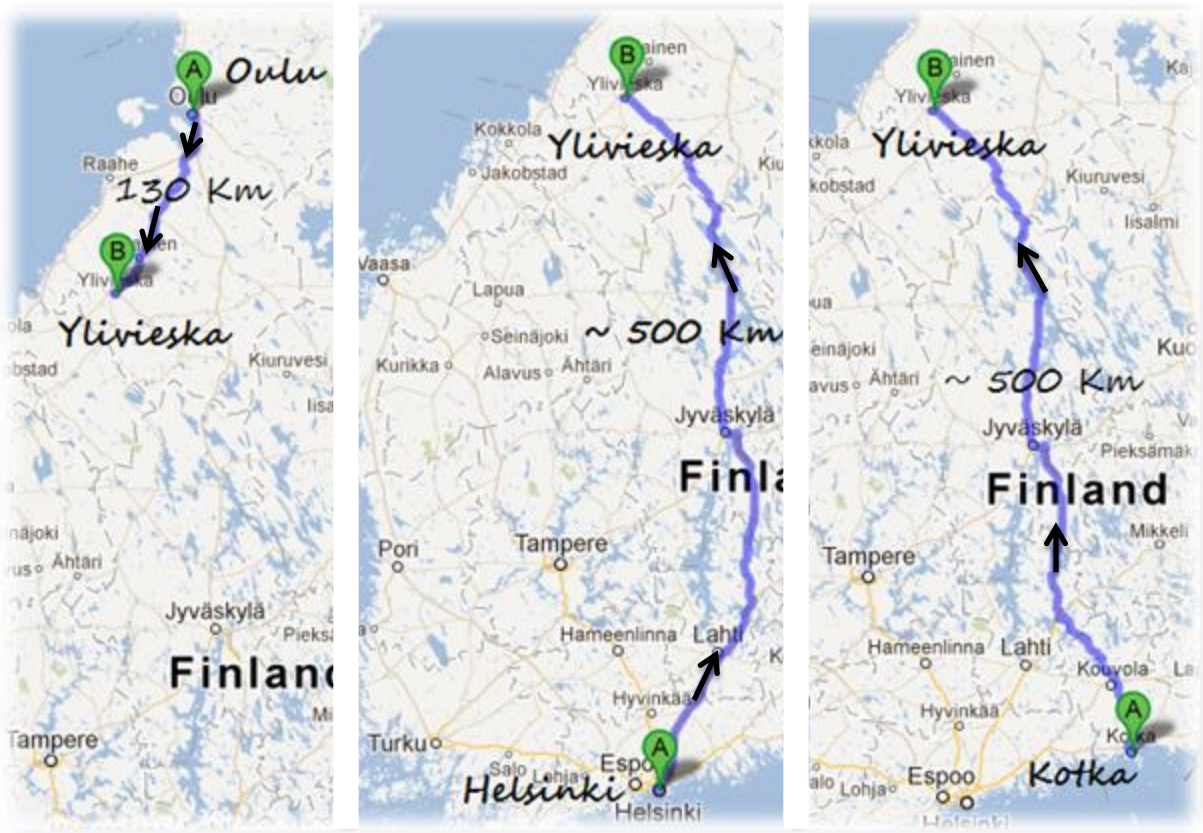
Kärkkäinen owns two warehouses at the moment, one is located in Ylivieska and the other one is located in Vähälä near to Oulu. The main warehouse is located in Ylivieska and has the capacity of 5500 number of pallets (EUR-pallet or pallet slot (0.8 x 1.2 m) 740 kg = 1 EUR pallet or an equivalent area of the pallet load heights). The capacity of Vähälä warehouse is about 3000 pallets. The products which are imported from Eastern countries are either stored in Vähälä warehouse or directly delivered to Kärkkäinen's different stores located in Finland and to the other wholesale customers. Products which are imported from European countries are stored in Ylivieska warehouse for the future use.

Before the arrival of the consignments the warehouse staff is informed by the freight forwarder so that the staff can arrange the required space for the arriving containers. When a container arrives either the Transport Company or Kärkkäinen warehouse staff takes the responsibility of the container unloading. It takes approximately 30 to 50 minutes to unload a container and then arrangement of the products according to the specified space in the warehouse so at the need of time the products can be located easily. To identify the products barcode system is normally used. Afterwards all the necessary documentation is reviewed and signed by the warehouse staff.

3.4 Frequently used Ports

The most frequently used ports by Kärkkäinen are Port of Helsinki, Port of Oulu and Port of Kotka (Hamina-Kotka). Port of Kotka and Helsinki are the biggest and the busiest ports of Finland and the port of Oulu is relatively smaller and has lesser container traffic than the other ports. The distance from the ports (Helsinki and Kotka) to Ylivieska is roughly 500 km and the distance between Ylivieska and Oulu is about 130 km. Port of Oulu is used for the products which are coming from Eastern countries and Port of Kotka or Helsinki are being used either for (LCL) or for the products which are coming from Europe. The containers are transferred by trucks or trailers from ports to the main warehouse. Another option is using train tracks but the distance is too short even though using trains will reduce the cost on transportation and the arrival time to the destination will be shorter, but it will increase the loading and unloading time and probably the total cost is likely to be more than before.

Figure 7. Location of Ylivieska from Ports in South of Finland (Source: Google Maps)



4 RECOMMENDATIONS

In LCL there is a high chance that goods can be damaged (See Chapter #2, Page 22). LCL is an option when there is cooperation between you and some other local companies. LCL is useful in terms of seasonal market. The best option for Kärkkäinen is to rent a warehouse or own a warehouse at one point where all the suppliers will deliver goods and then fill up the container so that only one container needs to be handled at a time. In this case it will work as LCL but in your own terms. Because you can fill up the container as much as you want without delaying the shipment and can ask the freight forwarders to put some other company's goods in the container and ship to Finland.

Another case can be collecting the goods at one place and then fill is a container with different material and ship to Finland. It will work as FCL but according to your own goods. There is no need to wait for the other suppliers to fill up stuff from different other companies.

FCL is the ideal option because the goods are in large quantity and it costs less than the LCL and as well the company has the freedom to fill the container according to your own desire. There is no need to wait for the other customers or suppliers to fill the whole container as it is in LCL and whenever you will need to ship you will have to contact the shipper and he will start moving the goods. And you will get your products according to the given time. In mu opinion LCL can be an option if there is close cooperation between the companies either in Ylivieska or in Finland, because when you have your seasonal markets they also have and probably they are dealing with the same issue "how to get the goods faster and cheaper". And if some how you can make it happen, you can save some money for the transportation.

To avoid miscommunication it is important to have more cooperation with the suppliers and the freight forwarders you are dealing with. In case if the supplier and freight forwarders are in business with you from a while, it shouldn't be a big issue demanding or asking them for more information about how the processes are running from their point of view (See Chapter #2,

Page 5). Another way is to use social media. Social media has become very popular and one of the cheapest way to connect with each other.

Some businesses are using similar sites like facebook to communicate with their employees throughout the organization. The same concept can be used to communicate with the companies you are in business with, either designing a special website or using facebook but for strictly business purpose and confirmation can be done about the processes on each step.

The use of ports is unavoidable and some researches argue that the more frequently used ports are more cost effective (See Chapter #2, Page 9). For example using port of Helsinki or Kotka can help to reduce the logistical cost because they have been in container business from a long time, and can provide the best possible solutions for almost all kind of issues. The processes are faster and much more reliable in bigger ports because they are competing for being the best and companies can take advantage of that because to stay in the competition with the other big ports they have to provide solutions at lower cost.

There is another way to transport goods from Asia to Finland. That is through rail transport from Russia. It can be very cost effective because it can bring the goods in half of the time in comparison with the sea transport. But it is very important to analyze the whole situation or make a certain plan for at least ten or twenty years ahead because Russia is unpredictable. In the past the taxes on the goods has been changed without any notices and then the price of transportation rises.

One way to transport goods is in containers another way is to move goods via trailers. In terms of container there is requirement of loading and unloading the containers from one mode to another. In trailers they can simply be attached to the trucks and start moving without any extra work e.g. loading and unloading. Use of trailers will reduce the time and transits and goods can be moved faster within Finland. Train tracks can be used within Finland, but the distance is shorter even though use of train will save plenty of time in travelling but the time will be consumed during loading and unloading process.

The warehouse can be used effectively if the products are arranged in a good manner i.e. the most frequently used products are available at the short distance from the delivery terminals and the products which are not so important are placed somewhere in the back of the warehouse. Labeling and position of the products are also one option, when products are arriving in the warehouse; the staff should pay attention while identifying the products so that they can be located when there is a need for those products (See Chapter #2, Page 25). There are multiple software solutions available for designing the warehouse, it can simulate the warehouse and from there you can look which is the best way to utilize the space of the warehouse.

Another option is to outsource the warehouse either in Finland or in nearby country where you will have control over your goods but the whole processes will be handled by a third party company. It will reduce the time spent in the warehousing. One option is to either rent a warehouse in Estonia or Sweden because the land and labor is cheaper than Finland. The goods can be brought to those countries and can be stored until their need. It might help to reduce the costs of the warehouse. And those countries are pretty close in case of Estonia; it is the same distance from Helsinki to Ylivieska. When the products are required they can be delivered from Estonia and it is possible that it will may reduce some cost but the initial investment and planning is required, so the best possible way is to perform those actions when there aren't so much demand on the products.

During the selection of the freight forwarder it isn't always necessary that the bigger companies will provide the best possible prices and other services. Bigger is not always better. Those companies are globally accepted and may have plenty of business available so they might not have to negotiate on every single detail. While the new companies or smaller companies which are just specializing in transportation from China to Finland can provide better solutions and affordable prices and it is very possible that they provide better services than the bigger companies. It would be easy to have good contacts with smaller companies because they might have only few customers and growing and Kärkkäinen can take advantage

of that because they can deal with the freight forwarder in their own terms and demands. It is still worth trying.

It is possible to create cooperation in such a way that either two or more super markets can buy a full container, and afterwards divide the space according to their needs. In this sense both companies will pay only for the space they used in terms of "Full Container Load". It might seem time consuming in the beginning but in the long run it can benefit to the company, because every time you would pay for a full container load and it will be combined with the other organization.

With the help of simulation software, one can see how the products will fit into a box for packaging after they are ready. From there we can determine how the products should be produced in order to take advantage from the situation. With the few millimeter change in product (without changing its design or shape) it might help to fit 10 products rather than 9 in a box. In the end the extra space can be used for storing other products. Customers probably won't even notice the change but for the company it will help to improve its logistical operations.

Providing a warehouse to the suppliers (who are doing business with you and willing to do more business in Finland) can be good for both the customer and the supplier. Suppliers can store their goods in your warehouses and your company will pay only when they will be taking the products out from the warehouse. In this way suppliers will not have to worry about shipping or due dates, because their products can be used at any given time and they will receive their money. It would be good for suppliers as well because they might not have to build extra warehouses in their countries.

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